

## PATENT COOPERATION TREATY

## PCT


## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference JPH/JM/CMcK/PO1PCT		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)			
International application No. PCT/GB 03/03415	International filing date (day/month/year) 05.08.2003	Priority date (day/month/year) 05.08.2002			
International Patent Classification (IPC) or both national classification and IPC A01D45/00					
Applicant McKEOWN, Colm					
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>					
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>					
Date of submission of the demand  05.03.2004		Date of completion of this report  23.11.2004			
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Schlichting, N  Telephone No. +49 89 2399-2428			



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/GB 03/03415**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-20 as originally filed

**Drawings, Sheets**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	
Inventive step (IS)	Yes: Claims	1-20
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

1. Document US-A-5 185 989 (D1) is regarded as being the closest prior art to the subject-matter of independent claims 1, 15 and 19 and shows (the references in parentheses applying to this document) a harvesting head (see Fig. 4) mountable on a robotic arm arrangement of the type having a robot end effector mounting flange and a rotation means (col. 6, l. 60-68), the head having a rotatable shaft with two ends, one end of the shaft being adaptable for engagement with the rotation means and the other end having a holder (26) fixed thereon for receiving an object to be harvested (col. 6, l. 11-18), the holder including means for releasably fixing the object relative to the holder. This known harvesting head is part of a system having a movement control device for delivering the harvesting head onto an object to be picked out of a growing bed (col. 6, l. 42-55). Furthermore D1 describes a method of harvesting objects such as mushrooms comprising the steps of identifying a mushroom to be harvested and delivering a harvesting head onto the mushroom which is to be picked out of a bed (col. 6, l. 42-55).

The subject-matter of claims 1, 15 and 19 differs from this known harvesting head in that a load cell is disposed on the harvesting head for measuring the force being applied to the object during harvesting. The subject-matter of claims 15 and 19 further differs from the known system and method in that controlling of the harvesting head takes place via a controller which is in communication with the load cell and which controls a picking cycle in response to values received from the load cell.

**The subject-matter of claims 1, 15 and 19 is therefore new (Article 33(2) PCT).**

The problem to be solved by the present invention may be regarded as providing a harvesting head, a system and a method for harvesting objects such as mushrooms which better avoids damage to the mushrooms.

**The solution to this problem proposed in claims 1, 15 and 19 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons.**

None of the cited documents describes or suggests a load cell being disposed on the harvesting head for measuring the force being applied to the object during harvesting. With the solution of the problem according to claims 1, 15 and 19 the load or force

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which is acting on the mushroom to be harvested is actually measured. Therefore, damage to the mushroom can be avoided more effectively. As none of the cited documents describes or suggests such harvesting head being provided with a load cell, the subject-matter of claims 1, 15 and 19 is inventive also in view of a combination of the documents cited in the search report.

2. Claims 2 to 7, 16 to 18 and 20 are dependent on either claims 1, 15 or 19 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
3. Although claims 1 and 8 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. **The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.**

In view of novelty and inventive step of the subject-matter of independent claim 8, respectively claims 9 to 14, the same argumentation is valid as for claims 1, 15 and 19, the subject-matter of claim 8 differing from D1 also in that the harvesting head is provided with a load cell for measuring the force being applied to the object during harvesting.

4. The requirements of Article 33(4) PCT concerning industrial applicability are fulfilled by all the claims.